

24. The hydrogel contact lens of claim 22, wherein the at least one amino acid is chosen from the group consisting of glycine, proline, glutamine, alanine, arganine, asparagine, lysine, leucine, serine, and isoleucine.
25. The hydrogel contact lens of claim 22, 23 or 24, wherein the monomer modified with at least one amino acid is a methacryloyl amino acid.
26. The hydrogel contact lens of claim 22, 23, or 24, wherein the monomer modified with at least one amino acid is copolymerized with a main chain and/or a side chain of the base material of the contact lens.
27. The hydrogel contact lens of claim 22, 23, or 24 wherein the percentage of amino acid in the modified polymer is 0.5% to 25% by weight.
28. The hydrogel contact lens of claim 22, 23, or 24 wherein the betaine is at least one of a sulfobetaine and a carboxybetaine chosen to form a block-free copolymer with the base material.
29. The hydrogel contact lens of claim 28 wherein the betaine is N-(3-sulfopropyl)-N-methacrylyhydroxyethyl-N,N-dimethyl-ammonium betaine (SPE).
30. The hydrogel contact lens of claim 28, wherein the percentage of betaine in the modified polymer is 0.5% to 22% by weight.
31. The hydrogel contact lens of claim 22, 23, or 24, wherein the base material of the contact lens includes at least one of hydroxyethyl methacrylate (HEMA), hydroxypropyl methacrylate (HPMA), vinylpyrrolidone (VP), and an acrylamide derivative.

32. The hydrogel contact lens of claim 31 wherein the base material of the contact lens includes dimethylacrylamide.

33. The hydrogel contact lens of claim 31, wherein the base material constitutes 53% to 99% by weight of polymer.

34. The hydrogel contact lens of claim 22, 23, or 24, wherein the refractive index of the contact lens is 1.22 to 1.51.

35. The hydrogel contact lens of claim 22, 23, or 24, wherein the contact lens, in a swollen state, contains more than 50% by weight of water.

36. The hydrogel contact lens of claim 35 wherein the contact lens in the swollen state contains 55% to 60% of water.

37. The hydrogel contact lens of claim 22, 23, or 24, wherein the lens has an oxygen permeability Dk value of $> 8 \times 10^{-11}$.

38. A method for the preparation of a polymer material for a hydrogel contact lens comprising the steps of:

mixing at least one methacrylate monomer, at least one monomer based on an amino acid, and at least one monomer based on betaine; and

polymerizing the mixed monomers with a starter and a cross-linking agent.

39. The method of claim 38, wherein the starter is a free radical starter.

40. The method of claim 39, wherein the starter is chosen from the group consisting of azo and peroxy compounds and photochemical reaction starters.

41. The method of claim 38 or 39, wherein the cross-linking agent is added in an amount of 0.01% to 3% by weight.

42. The method of claim 38 or 39, wherein the contact lens is polymerized individually as a cast lens with a polymerization time of less than one hour.

43. The method of claim 42, wherein the reaction starter is added in an amount of 0.2% to 0.5% by weight.

44. The method of claim 38 or 39, wherein the mixture of material initially is polymerized into a block-shape for approximately 1 to 3 days at a controlled temperature and the individual contact lenses are then machined out of the block material.

45. The method of claim 44, wherein the reaction starter is added in an amount of 0.05% to 0.2% by weight.

46. The method of claim 38 or 39, wherein up to 20% glycerin is added for the polymerization step.

47. The method of claim 55, wherein the percentage of monomers based on amino acids is 0.5% to 25% by weight, the percentage of monomers based on betaine is 0.5% to 22% by weight and the percentage of methacrylate monomers is 99% to 53% by weight.